

REMARKS

A. The Status of the Claims and the Amendments

By the present amendment, new claims 47-56 have been added. No new matter is recited in the newly added claims. After the entry of the present amendment, claims 1-6, and 8-56 will be pending, of which claims 14-46 were previously withdrawn from consideration.

It is submitted that all the pending claims are in condition for allowance. Entry of the amendments is respectfully requested.

B. Rejection Under 35 U.S.C. § 112, First Paragraph

Claims 1-6 and 8-13 stand rejected under 35 U.S.C. § 112, first paragraph, as allegedly failing to comply with the written description requirement (item 2, page 2 of the Office Action). Specifically, the Examiner has stated that the limitations “preparing an aqueous solution at room temperature” and “dissolving, at room temperature, the metal cations and the reducing agent” recited in claim 1 are not supported by the original specification. According to the Examiner, the specification is allegedly silent with regard to the temperature at which the above-mentioned steps are carried out. This rejection is respectfully traversed.

The Applicants respectfully point out that while it is true that the application does not literally mention “room temperature,” it is inherently disclosed that it is indeed the room temperature that is used. For example, it is disclosed in paragraph [0016] on page 4 of the originally filed application that the relevant components “are mixed in aqueous solution **prior to heating**” (emphasis added). For further illustration, see also Example 1 (paragraph [0060] on page 16) that also describes that the step of mixing precedes that of heating.

If the temperature at which the components are mixed were other than the room temperature, it would have been mentioned, because the temperature is an important parameter

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of any chemical process. When the room temperature is used, not mentioning any temperature at all is a common short-cut widely employed in the fields of chemistry and chemical engineering. By default, the room temperature is clearly implied in such situations. Because no specific temperature, at which the step of mixing is performed, is mentioned, it is submitted, that in the context of the current invention, those having ordinary skill in the art would clearly understand, that the step of mixing is carried out at room temperature.

In view of the foregoing, it is submitted that the rejection under 35 U.S.C. § 112, first paragraph, does not apply. Withdrawal of the rejection and reconsideration are respectfully requested.

B. Rejections Under 35 U.S.C. § 103(a)

Claims 1-4, 8, and 9 stand rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over U.S. Patent No. 5,945,293 to Siiman et al. in view of U.S. Patent No. 5,384,265 to Kidwell et al. (item 3 on pages 3-4 of the Final Office Action). This rejection is respectfully traversed on the following grounds.

It is submitted that the Examiner has not established a *prima facie* case of obviousness, because: (1) there is no suggestion or motivation to combine the references as proposed by the Examiner; (2) there is no reasonable expectation that such a combination will lead to success and (3) the combination of references, as proposed, fails to teach or suggest all of the claim limitations.

Siiman et al. disclose a method of reduction by titrating with the reducing agent that is added to a hot solution of a metallic salt. More specifically, Siiman et al. describe a method of forming metallic colloids by reacting silver cations with a reducing agent, by combining a hot solution containing silver nitrate and a solution of a reducing agent (col. 12, lines 65-67), followed by maintaining the mixture at the elevated temperature (col. 13, lines 3-5). Siiman et

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al. also teach using a 0.589M silver nitrate solution (col. 12, line 58) and a 1.36M sodium citrate solution (col. 12, lines 65-66). From the latter disclosure, the Examiner has concluded that the solutions employed by Siiman et al. encompass the range of concentrations ($\geq 0.5\text{M}$) recited in claim 1.

The Examiner is mistaken with regard to the conclusion that the concentration of the silver nitrate solution that is taught by Siiman et al. anticipate the range recited in claim 1. The Examiner probably has not noticed that the initial silver nitrate solution in Siiman et al. was very much diluted. Indeed, 0.589M is the initial concentration of the solution, not the final concentration. It is submitted that the 0.5M concentration recited in claim 1 refers to the concentration in the total aqueous solution, i.e., “the aqueous solution including metal cations and a reducing agent,” not to the concentration of the original solution of silver nitrate that is the initial component used to prepare the total solution.

To illustrate, Siiman et al. teach that 3.12 mL of 0.589M solution of silver nitrate is mixed with 540 mL of water, then heated, then mixed with 30 mL of a polystyrene emulsion Amdex-PS, then mixed with 48 mL of a sodium citrate solution (col. 12, lines 56-67). The quantity of silver nitrate contained in 3.12 mL of 0.589M solution can be calculated as follows. 1M solution of silver nitrate by definition contains 1 mole of silver nitrate in 1,000 mL of the solution; therefore, 0.589M solution of silver nitrate contains 0.589 mole of silver nitrate in 1,000 mL of the solution

Thus, 3.12 mL of 0.589M solution contain $(0.589 \times 3.12)/1,000 = 0.0018376\text{M}$ of silver nitrate. It is easy to see that the total volume of the combined mixture was $3.12 + 540 + 30 + 48 = 621.12\text{ mL}$. The total solution contained 0.0018376M of silver nitrate; thus, the concentration of silver nitrate in the total solution was $(0.0018376 \times 1,000)/621.12$ or about 0.003M. It is 0.003M concentration that has to be compared with the concentration that is recited in claim 1.

In view of the foregoing, it is clear that Siiman et al. disclose the concentration of silver nitrate in the total solution of about 0.003M but fail to disclose that “the metal cations and reducing agent are each present in the aqueous solution at a concentration of at least about 0.5M,” as required by claim 1. As can be seen, the concentration recited in claim 1 is about 170 times higher than the concentration disclosed by Siiman et al. It is submitted that the difference in the respective ranges of concentrations is so high that one skilled in the art would not be motivated to modify the teachings of Siiman et al. and to arrive to what is recited in claim 1. Accordingly, Siiman et al. fail to disclose or suggest every element of claim 1.

Kidwell et al. fail to cure the deficiencies of Siiman et al. Kidwell et al. describe a method of fabricating platinum colloids by combining platinum chloride in the form of H_2PtCl_6 , with a reducing agent (ascorbic acid), followed by heating to 85°C for about 30 minutes and cooling. Kidwell et al. specifically disclose that 50 μl of 8% (mass) H_2PtCl_6 is dissolved in 10 ml of water and then 300 mg of ascorbic acid and 300 mg of NaHCO_3 is added prior to the heat treatment (see, col. 6, lines 58-62).

It is clear that the concentration of platinum cations as taught by Kidwell et al. is very low. In fact, it is easy to calculate that the original 50 μl of 8% H_2PtCl_6 contains about 4 μg or 0.00975 μM ($4/410.08$) of platinum chloride (since the molecular weight of H_2PtCl_6 is 410.08). When 10 ml of water is then added, the concentration of platinum chloride in the solution is therefore $(0.00975 \times 1,000)/10 = 0.975 \mu\text{M}$, or about 500,000 times lower than what is required by claim 1 of the current application or 3,000 times lower than what is taught by Siiman et al. Therefore, Kidwell et al. teach even lower concentration of metal cations than do Siiman et al. and one skilled in the art would not be motivated to use Kidwell et al. to modify Siiman et al. as proposed by the Examiner.

Accordingly, even if Siiman et al. and Kidwell et al. are combined, the combination of these three references does not disclose or suggest every element of claim 1. It is therefore

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submitted that claim 1 is patentably distinguishable over Siiman et al. in view of Kidwell et al. Each of claims 2-4, 8, and 9 depends on claim 1 and is considered patentable for at least the same reason. In view of the foregoing, withdrawal of the rejection and reconsideration are respectfully requested.

In addition, claim 5 stands rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Siiman et al. in view of Kidwell et al. and further in view of U.S. Patent Application No. 2004-0234958 to Smith et al. (item 4 on page 4 of the Final Office Action). This rejection is respectfully traversed on the following grounds.

As discussed above, neither Siiman et al. nor Kidwell et al. nor a combination thereof teaches or suggests that “the metal cations and reducing agent are each present in the aqueous solution at a concentration of at least about 0.5M,” as required by claim 1. Smith et al. fail to cure this deficiency. As noted by the Examiner, Smith et al. teach microwave generators, but there is nothing in Smith et al. that would motivate one skilled in the art to use the concentrations required by claim 1.

Accordingly, even if Siiman et al., Kidwell et al., and Smith et al. are combined, the combination of these three references does not disclose or suggest every element of claim 1. It is therefore submitted that claim 1 is patentably distinguishable over Siiman et al. in view of Kidwell et al. and further in view of Smith et al. Claim 5 depends on claim 1 and is considered patentable for at least the same reason. In view of the foregoing, withdrawal of the rejection and reconsideration are respectfully requested.

Furthermore, claim 6 stands rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Siiman et al. in view of Kidwell et al. and further in view of U.S. Patent No. 6,640,970 to Strohmaier et al. (item 5 on page 5 of the Final Office Action). This rejection is respectfully traversed on the following grounds.

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As discussed above, neither Siiman et al. nor Kidwell et al. nor a combination thereof teaches or suggests that “the metal cations and reducing agent are each present in the aqueous solution at a concentration of at least about 0.5M,” as required by claim 1. Strohmaier et al. fail to cure this deficiency. Strohmaier et al. teach using convection ovens, but there is nothing in Strohmaier et al. that would motivate one skilled in the art to use the concentrations required by claim 1.

Accordingly, even if Siiman et al., Kidwell et al., and Strohmaier et al. are combined, the combination of these three references does not disclose or suggest every element of claim 1. It is therefore submitted that claim 1 is patentably distinguishable over Siiman et al. in view of Kidwell et al. and further in view of Strohmaier et al. Claim 6 depends on claim 1 and is considered patentable for at least the same reason. In view of the foregoing, withdrawal of the rejection and reconsideration are respectfully requested.

Finally, claims 10-13 stand rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Siiman et al. in view of Kidwell et al. and further in view of U.S. Patent No. 5,736,624 to Bieniarz et al. (item 6 on pages 5-6 of the Final Office Action). This rejection is respectfully traversed on the following grounds.

As discussed above, neither Siiman et al. nor Kidwell et al. nor a combination thereof teaches or suggests that “the metal cations and reducing agent are each present in the aqueous solution at a concentration of at least about 0.5M,” as required by claim 1. Bieniarz et al. fail to cure this deficiency. As correctly pointed out by the Examiner, Bieniarz et al. teach functionalization of a protein by conjugating cystamine to the protein molecule. There is nothing in Bieniarz et al. that would motivate one skilled in the art to use the concentrations required by claim 1.

Accordingly, even if Siiman et al., Kidwell et al., and Bieniarz et al. are combined, the combination of these three references does not disclose or suggest every element of claim 1. It is

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therefore submitted that claim 1 is patentably distinguishable over Siiman et al. in view of Kidwell et al. and further in view of Bieniarz et al. Each of claims 10-13 depends indirectly on claim 1 and is considered patentable for at least the same reason. In view of the foregoing, withdrawal of the rejection and reconsideration are respectfully requested.

C. New Claims

New claims 47-56 are directed to an embodiment of the invention where the heating of the aqueous solution to about 95°C lasts “for about 60 minutes.” None of the references cited by the Examiner disclose or suggest such a limitation. Siiman et al. teach a step of 30-minute heating, but there is no disclosure or suggestion that a longer heating period can be used.

It is therefore, submitted that each of claims 47-56 is patentably distinguishable and should be allowed.

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CONCLUSION

In view of the above amendments and remarks, reconsideration and favorable action on all claims are respectfully requested. In the event any matters remain to be resolved, the Examiner is requested to contact the undersigned at the telephone number given below so that a prompt disposition of this application can be achieved.

No fee is deemed to be due in connection with this response. However, if any additional fee is due, the Commissioner is hereby authorized to charge any other fees associated with the filing submitted herewith, or credit any overpayments to Deposit Account No. 07-1896 referencing the above-identified attorney docket number. A duplicate copy of the Transmittal Sheet is enclosed.

Respectfully submitted,

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